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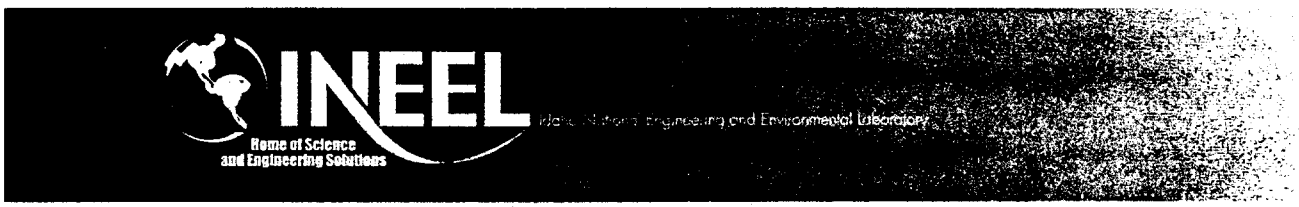
U.S. Department of Energy
Idaho Operations Office

Field Sampling Plan for Waste Area Group 10 Track 2 Investigation



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Field Sampling Plan for Waste Area Group 10 Track 2 Investigation

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Prepared for the
U.S. Department of Energy
Idaho Operations Office

ABSTRACT

This Field Sampling Plan describes a series of Waste Area Group 10 field investigations for Operable Unit 10-08 sites, including the test drum in the EOCR-1 leach pond (MISC-33), soil-filled concrete ring (CFA-10A), TRA-605 warm waste pipeline (TRA-63), and the fenced area north of TRA-608 (TRA-60). The activities support the Track 2 investigation required by the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*.

Together, this Field Sampling Plan and the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Deactivation, Decontamination, and Decommissioning* constitute the sampling and analysis plan to support these Track 2 investigations. The Field Sampling Plan provides guidance for the site-specific activities, including sampling, quality assurance, quality control, analytical procedures, and data management. Use of the Field Sampling Plan will help ensure that data are scientifically valid, defensible, and of known and acceptable quality. The Quality Assurance Project Plan describes the quality assurance/quality control protocols that will be used in achieving the data quality objectives specified in this Field Sampling Plan.

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FIGURES

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ACRONYMS

AA	alternative action
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DQO	data quality objective
DS	decision statement
EOCR	Experimental Organic-Cooled Reactor
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
FFA/CO	Federal Facility Agreement and Consent Order
FSP	field sampling plan
FTL	field team leader
GDE	guide
ICP	Idaho Completion Project
IDW	investigation-derived waste
INEEL	Idaho National Engineering and Environmental Laboratory
MCP	management control procedure
PPE	personal protective equipment
PRD	program requirements document
PSQ	principle study question
QA/QC	quality assurance/quality control
QAPjP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act

SVOC	semivolatile organic compound
TEM	template
TPH	total petroleum hydrocarbon
TPR	technical procedure
TRA	Test Reactor Area
WAG	waste area group
WGS	Waste Generator Services

Field Sampling Plan for Waste Area Group 10 Track 2 Investigation

1. INTRODUCTION

This Field Sampling Plan (FSP) provides guidance for data collection at several Waste Area Group (WAG) 10 sites in accordance with the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991a). These data are needed to evaluate the presence and distribution of contaminants at four Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites within WAG 10 at the Idaho National Engineering and Environmental Laboratory (INEEL). This investigation will include a risk assessment in which risks to human and ecological receptors for site-specific exposures are evaluated. This FSP is written in accordance with the *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (EPA 1988); the *Action Plan for Implementation of the Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991b); Management Control Procedure (MCP) -9439, "Preparation for Environmental Sampling Activities at the INEEL"; Template (TEM) –104, "Model for Preparation of Characterization Plans"; and *Track 2 Sites: Guidance for Assessing Low Probability Hazard Sites at the INEL* (DOE-ID 1994). This FSP is implemented with the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Deactivation, Decontamination, and Decommissioning* (DOE-ID 2004a) and the *Health and Safety Plan for the Waste Area Group 10 Track 2 Investigation Sites* (ICP 2004). Together, the Quality Assurance Project Plan (QAPjP) and this Track 2 FSP constitute the sampling and analysis plan for the following sites:

- The experimental test drum in the Experimental Organic-Cooled Reactor (EOCR) -01 leach pond (MISC-33)
- The soil-filled concrete ring (Central Facilities Area [CFA] -10A)
- The Test Reactor Area (TRA) -605 warm waste line (TRA-63)
- The fenced area north of TRA-608 (TRA-60).

These sites are being addressed under an INEEL Track 2 investigation. The purpose of the investigation is to provide additional data for input into the WAG 10 Operable Unit 10-08 Remedial Investigation/Feasibility Study.

1.1 Background and Description

The INEEL occupies 2,300 km^2 (890 mi^2) of the northwestern portion of the eastern Snake River Plain (Figure 1-1). The INEEL is divided into 10 WAGs under the Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991a). Waste Area Groups 1 through 9 correspond to individual facilities, while WAG 10 corresponds to Sitewide concerns, including the Snake River Plain Aquifer. Potentially contaminated sites discovered after a Record of Decision has been signed also are included in WAG 10.

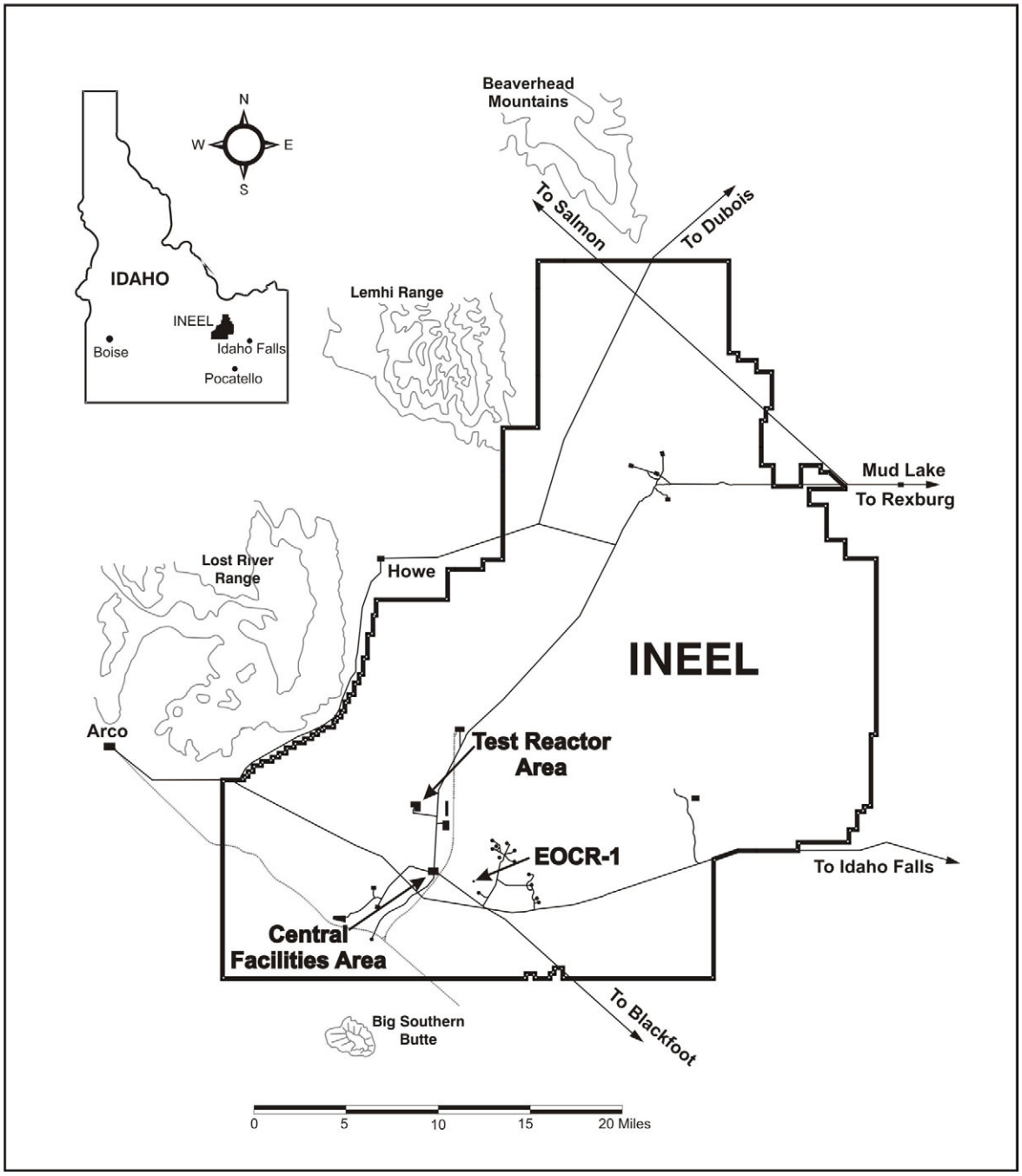

Figure 1-1. Idaho National Engineering and Environmental Laboratory.

1.2 Experimental Test Drum in the EOCR-01 Leach Pond (MISC-33)

1.2.1 Site Background and Description

The experimental test drum in the EOCR-01 leach pond (MISC-33), located approximately 2.5 mi southeast of the CFA, consists of a drum inside a stainless steel cylinder and a metal/stainless steel apparatus (Figure 1-2). The annulus between the drum and the stainless steel cylinder contains soil. The

actual drum contains ashes, thermocouples, graduated cylinders, beakers, stainless steel blocks, pipettes, crucibles, and other items generated during a series of experiments conducted in the test drum. The tests, which were completed in May 1982, involved the explosive characterization of unleached ion exchange resins mixed with nitric acid. Based on the results of the experiments, it was concluded that the resin/nitric acid mixture posed no significant explosion risks (Scarpellino et al. 1984). Approximately 50 small-scale tests and one large scale test were performed during the experiment. Lead trauzl blocks were used during each test and might have contributed lead to the ashes—all lead blocks were removed after each test. The final test was large-scale with temperatures exceeding 1,800°F, which most likely burned off any explosive compounds present in the drum.

1.2.2 Constituents of Concern

The constituents of concern at MISC-33 are lead and nitroaromatics. A radiological survey of surficial soil in the area was conducted in August 1991. The results of the survey indicated that only background radiological conditions exist at MISC-33. No other field screening or laboratory data exist for MISC-33.

1.3 Soil-Filled Concrete Ring (CFA-10A)

1.3.1 Site Background and Description

The CFA-10A site, located near CFA-667, consists of a soil-filled concrete ring discovered during remediation of CFA-10 (Figure 1-3). The concrete ring is about 4 ft in diameter and its past use is unknown. However, it is suspected that the concrete ring might be the upper portion of a dry well used to receive moisture from the driveway on the east side of CFA-667.

1.3.2 Constituents of Concern

The constituents of concern are not known because of lack of knowledge concerning the nature of the soil-filled concrete ring. However, based on its location, the following constituents of potential concern were chosen: alpha, beta, gamma-emitting radionuclides, semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPHs), and metals.

1.4 TRA-605 Warm Waste Pipeline (TRA-63)

1.4.1 Site Background and Description

During the TRA-605 Warm Waste Pipeline Replacement Project in October 2001, soil was discovered at approximately 60 in. below ground surface (bgs), exhibiting 30,000 dpm. Further excavation was conducted in the area and a breach was found in the 4-in. Duriron warm wastewater pipeline at about 72 in. (6 ft) bgs. The pipe was found to have a shear offset of about ½-in. with the offset constituting approximately 13% of the cross-sectional area of the pipe. Workers observed that the edges of the sheared pipe appeared corroded, suggesting that the pipe had been damaged for some time. Before pipeline repair activities commenced, contaminated water was observed issuing from the breach in the pipeline and from the surrounding formation. Approximately 3 gal of contaminated water had filled the excavation before repair of the 4-in. Duriron warm wastewater pipeline began. A radiological survey of the soil in the immediate vicinity of the 4-in. warm wastewater pipeline confirmed the presence of 300,000 dpm of contamination. During this effort, approximately 4 yd^3 of contaminated soil was removed from the vicinity of the warm waste pipeline (Figure 1-4).

1.4.2 Constituents of Concern

The constituents of concern at TRA-63 are radionuclides (i.e., alpha, beta, gamma, and tritium). No further site characterization has been conducted since the warm waste line was repaired in October 2001.

1.5 Fenced Area North of TRA-608 (TRA-60)

1.5.1 Site Background and Description

The fenced area north of TRA-608 (Figure 1-5) was used from 1952 to 1999 for support operations related to the TRA process water demineralizer process. The structures within the fenced area include two acid tanks (TRA-731D and TRA-731E), two caustic tanks (TRA-731B and TRA-731C), a pumphouse (TRA-631), a regenerant effluent neutralization tank (TRA-708C), a brine pit (TRA-731A [CERCLA Site TRA-20]), an east-west trench, and a north-south trench (CERCLA Site TRA-40). The piping and contaminated debris in the north-south trench were removed under NEW-TRA-006 of the Voluntary Consent Order during the spring of 2000. Both the Brine Pit (TRA-20) and the north-south trench (TRA-40) were determined to be "no further action" sites in the *Final Record of Decision, Test Reactor Area, Operable Unit 2-13* (DOE-ID 1997).

On November 3 and 4, 1996, TRA-708C (which was used as an elementary neutralization unit for the TRA-608 demineralizer process) experienced leaks (DOE 1999). The regenerant effluent was primarily comprised of sulfuric acid and sodium hydroxide, and the releases at TRA-708C were classified as corrosive characteristic hazardous waste. Furthermore, the commercial-grade sulfuric acid was determined to be contaminated with mercury and lead. The total volume of release at TRA-708C was estimated to be 5,676 L (1,500 gal).

Several rounds of soil sampling were conducted at TRA-60 from 1999 to 2001. The sampling efforts focused on the area around the base of TRA-708C, along the north-south trench (TRA-40), along and beneath the east-west trench (north of TRA-608), and at random locations throughout the fenced area north of TRA-608. Several areas within the fenced area north of TRA-608 were identified as having unacceptable concentrations of contaminants in the soil. Elevated concentrations of lead were found in soil at the base of TRA-708C and along the north side of the east-west trench. In addition, elevated levels of mercury were detected in soil in the north-south trench near the base of TRA-708C and along the north side of TRA-608.

1.5.2 Constituents of Concern

Based on the findings of previous investigations, the constituents of concern within the fenced area north of TRA-608 are lead and mercury. The source of the lead and mercury is suspected to be contaminated commercial-grade sulfuric acid.

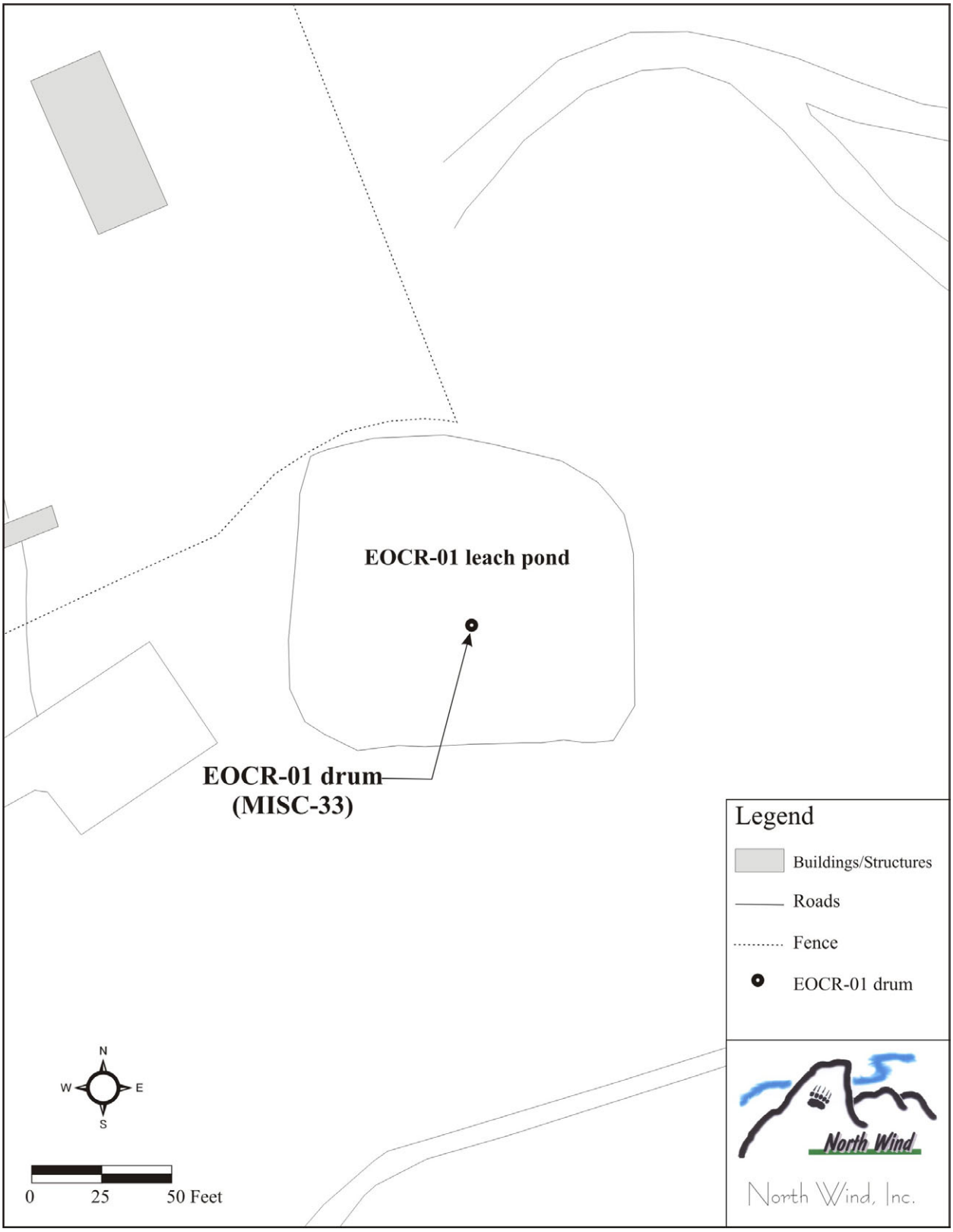

Figure 1-2. Experimental test drum in the EOCR-01 leach pond (MISC-33).

Figure 1-3. Soil-filled concrete ring (CFA-10A).

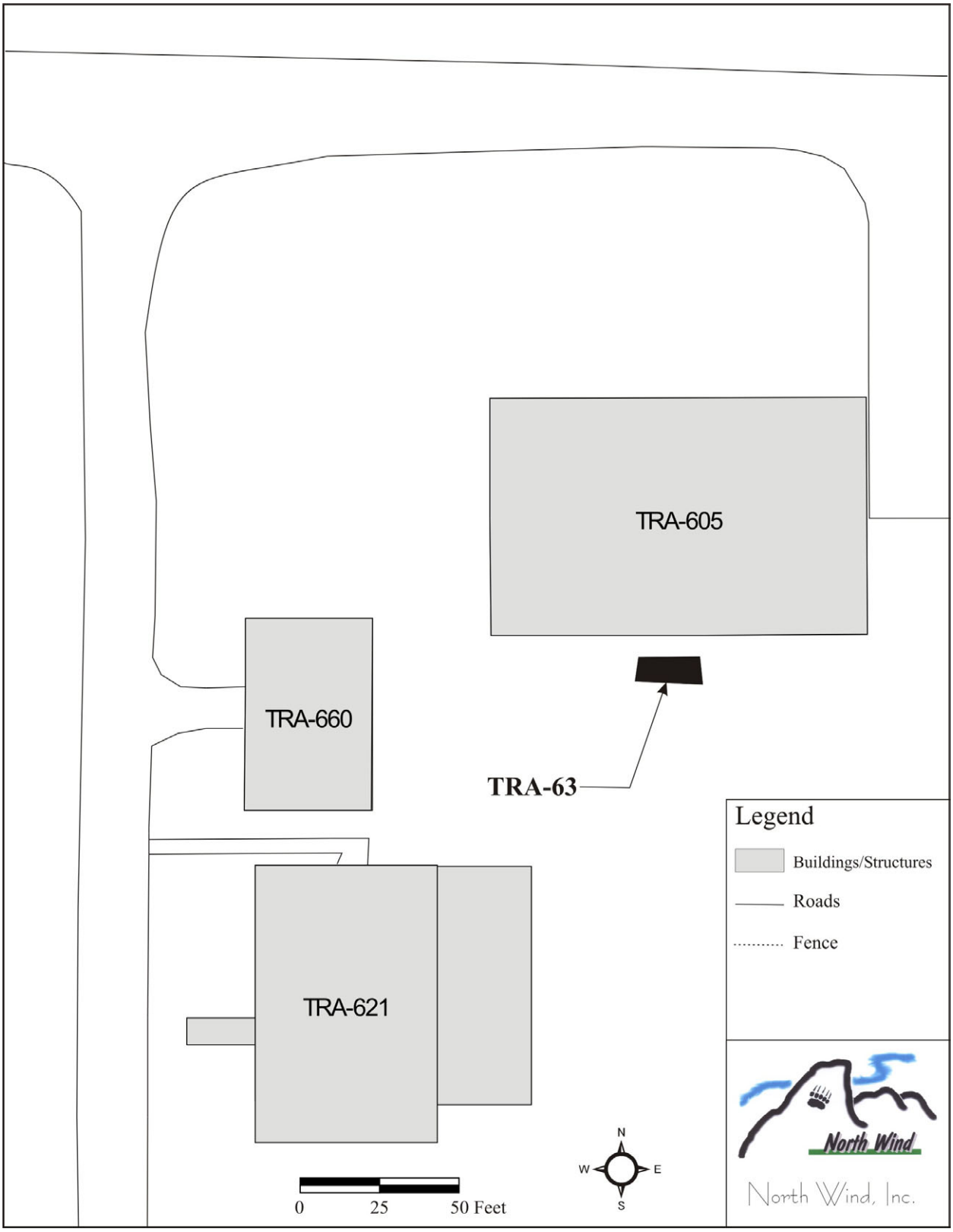

Figure 1-4. The TRA-605 warm waste pipeline (TRA-63).

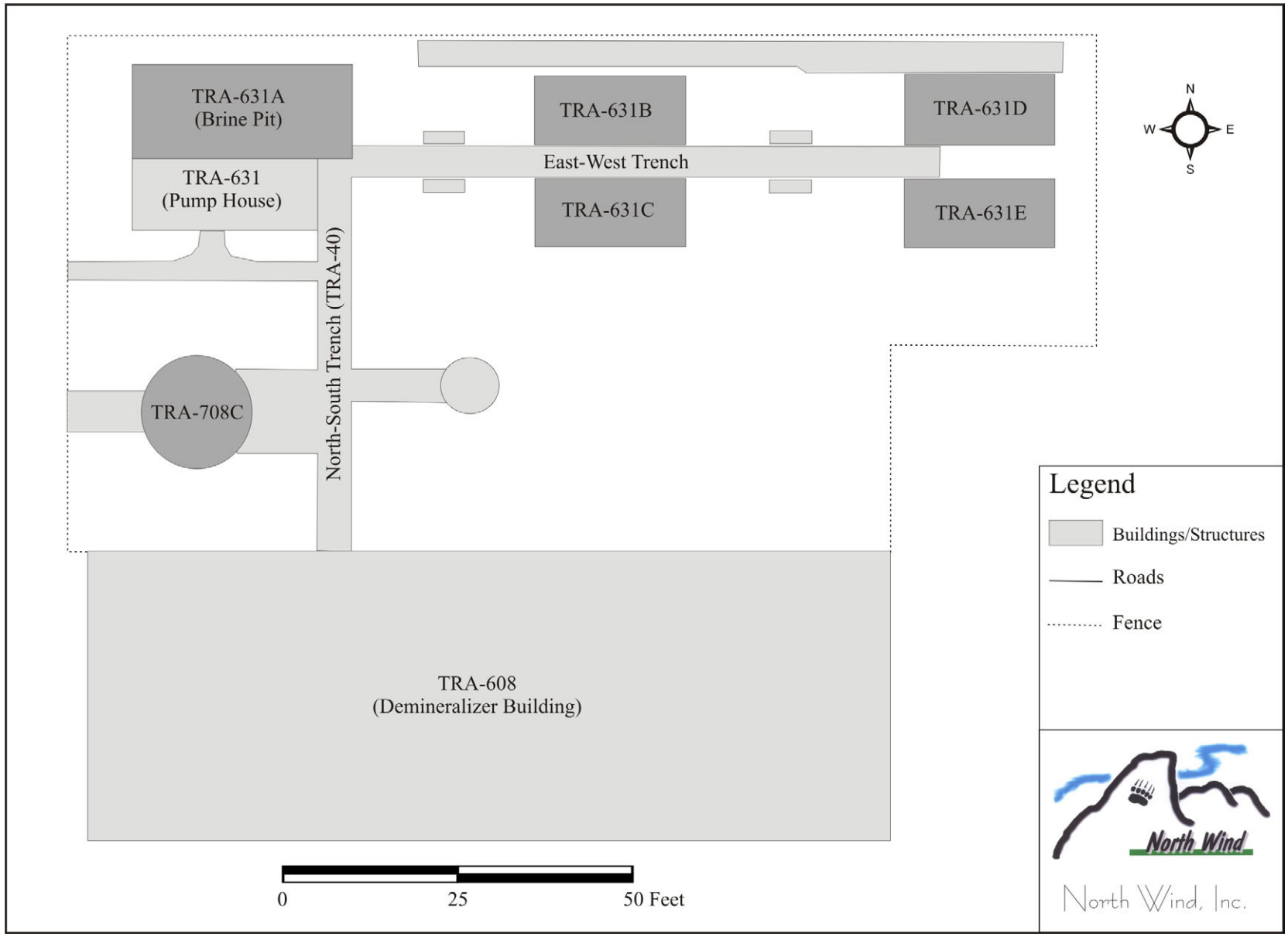

Figure 1-5. Fenced area north of TRA-608 (TRA-60).

2. DATA QUALITY OBJECTIVES

The data quality objective (DQO) process—as defined by *Guidance for the Data Quality Objectives Process* (EPA 1994)—is an iterative, strategic planning approach designed to ensure that the type, quality, and quantity of environmental data used in decision-making are appropriate for the intended application. The goals of the DQO process are technical adequacy (technically sound deliverables), defensibility, consistency in approach and documentation, and cost effectiveness. Once established, the DQOs are used to develop a scientific and resource-effective data collection design.

The DQO process specifies project decisions, the data quality required to support those decisions, specific data types needed, data collection requirements, and analytical techniques necessary to generate the specified data quality. The process also ensures that the resources required to generate the data are justified. The DQO process consists of seven steps of which the output from each step influences the choices that will be made later in the process. These steps include the following:

1. State the problem
2. Identify the decision
3. Identify the inputs to the decision
4. Define the study boundaries
5. Develop a decision rule
6. Specify tolerable limits on decision errors
7. Optimize the design.

During the first six steps of the process, the planning team develops decision performance criteria (i.e., DQOs) that will be used to develop the data collection design. The final step of the process involves developing the data collection design based on the DQOs. A brief discussion of these steps and their application to each site in this Track 2 investigation is provided below.

2.1 State the Problem

The purpose of this step is to clearly and concisely state the problem to be addressed in the context of each area so that the focus of the investigation will be unambiguous. The concise problem statement describes the problem as it is currently understood and the conditions that are causing the problem. Previous studies and existing information are reviewed to gain a sufficient understanding for defining the problem. The appropriate outputs for this step are a concise description of the problem, a list of the planning team members, identification of the decision-maker(s), and a summary of available resources and relevant deadlines for the study. The planning team members and decision-makers are identified in Section 7. The investigation is scheduled for the summer of 2004.

2.1.1 Experimental Test Drum in the EOCR-01 Leach Pond (MISC-33)

At MISC-33, the drum contents and the soil within the annulus between the drum and the stainless steel cylinder might contain unacceptable amounts of lead and nitroaromatics. The nature of the drum contents and the soil in the annulus between the drum and the stainless steel cylinder needs to be determined in order to determine its proper disposal (i.e., hazardous versus nonhazardous waste). If these

media are contaminated with unacceptable amounts of lead and/or nitroaromatics, then disturbance of the drum contents could result in potential exposure pathways of ingestion, inhalation, and dermal absorption of contaminated soil and will therefore require proper disposal as a hazardous waste. Because the potentially contaminated material is contained within the drum, migration to groundwater is unlikely. Therefore, exposure to the contaminated groundwater pathway is considered incomplete. The soil material, debris, and ash within the experimental test drum and the soil within the annulus between the drum and the stainless steel cylinder will be sampled during this Track 2 investigation.

2.1.2 Soil-Filled Concrete Ring (CFA-10A)

The purpose and past use of the soil-filled concrete ring (CFA-10A) are currently unknown. It has been speculated that the ring is the upper portion of a dry well designed to receive moisture from a nearby driveway. Even if this is so, the nature of the materials and liquids that might have entered the soil-filled concrete ring is unknown. Therefore, the nature and extent of potential soil contamination in and around the soil-filled concrete ring need to be determined to establish whether soil within the concrete ring poses a threat to human health or the environment. If the soil in and around the ring is contaminated, then soil disturbance could result in exposure pathways of ingestion, inhalation, and dermal absorption of contaminated soil. The exposure to the groundwater pathway is considered incomplete because of the semiarid climate and lack of sustained hydraulic head-to-drive contaminants to the aquifer. Soil in and around the concrete ring will be sampled from the ground surface to a depth of 3 m (10 ft) bgs to evaluate whether contaminated soil exists at CFA-10A.

2.1.3 TRA-605 Warm Waste Pipeline (TRA-63)

At TRA-63, soil with relatively high amounts of radioactivity (30,000 to 300,000 dpm) was discovered near a break in the 4-in. Duriron warm wastewater pipeline near TRA-605. This break was an approximate 1/2-in. offset shear in the 4-in. pipeline from which radioactive wastewater was observed to be seeping. The edges of the sheared pipe were corroded, indicating that the break might have existed for some time. The ratio of the surface area of the break to the cross-sectional area of the pipe was approximately 0.13; approximately 13% of the discharge through the pipe could potentially have been lost through the crack. Therefore, while the amount of wastewater released to the environment is unknown, the actual quantity released could be as high as 1,722,240 gal (230,230 ft^3) of warm wastewater.

The nature and extent of soil contamination at TRA-63 need to be determined. Soil disturbance around the break in the 4-in. Duriron warm wastewater line could result in exposure pathways of ingestion, inhalation, and dermal absorption of contaminated soil. Furthermore, the potential exists that the wastewater has infiltrated the perched water due to the potentially high quantity of warm wastewater released to the environment. Therefore, the exposure pathway of ingestion and dermal absorption of contaminated groundwater could exist. Beginning near the break in the pipeline (approximately 6 ft bgs), a vertical profile of the soil will be sampled downward until field screening indicates that no radioactive contamination is present in the soil. In addition, the horizontal extent of radioactive soil contamination will be determined by advancing several soil borings in the area surrounding the break in the pipeline.

2.1.4 Fenced Area North of TRA-608 (TRA-60)

Previous studies at TRA-60 indicate that soil contaminated with lead and mercury is present in several areas within the fenced area north of TRA-608. These areas include the base of TRA-708C (regenerant effluent neutralization tank), a portion of the north-south trench nearest TRA-708C, along the north side of the east-west trench, and along the north side of the TRA-608 building. Each area requires additional sampling to fully characterize soil contamination within the fenced area north of TRA-608. If the soil within the fenced area north of TRA-608 is contaminated, then soil disturbance could result in

exposure pathways of ingestion, inhalation, and dermal absorption of contaminated soil. The exposure to groundwater pathway is considered incomplete because of the semiarid climate and lack of sustained hydraulic head-to-drive contaminants to the aquifer. Soil in and around the above areas will be sampled from the ground surface to a depth of 3 m (10 ft) bgs.

2.2 Identify the Decision

The primary objective of this step is to develop accurate and comprehensive decision statements (DSs) that address the concerns highlighted in the problem statement. This includes identifying the questions that the study will attempt to resolve and what actions could result or be affected by the data collected. This is done by specifying a principle study question (PSQ), identifying alternative actions (AAs) that could result from resolution of the PSQ, and combining the PSQ and AAs into a DS.

2.2.1 Experimental Test Drum in the EOCR-01 Leach Pond (MISC-33)

The objective of sampling the soil material, debris, and ash within the experimental test drum and the soil within the annulus between the drum and the stainless steel cylinder will be to answer the following question:

- PSQ: Do the drum contents and the soil within the annulus between the drum and the stainless steel cylinder contain lead and nitroaromatics at concentrations that preclude its disposal as industrial (nonhazardous) waste?

The AAs to be taken, depending on the resolution to the PSQ, are as follows:

- AA1: If analytical laboratory results from soil sampling show that the drum contents and the soil within the annulus between the drum and the stainless steel cylinder contain lead and nitroaromatics at concentrations that preclude its disposal as industrial (nonhazardous) waste, then these materials will need to be removed from the leach pond and disposed of properly as a hazardous waste.

- AA2: If analytical laboratory results from soil sampling show that the drum contents and the soil within the annulus between the drum and the stainless steel cylinder do not contain lead and nitroaromatics at concentrations that preclude its disposal as industrial (nonhazardous) waste, then the drum and its contents can be disposed of as industrial (nonhazardous) waste.

Combining the PSQ and the AAs results in the following DS:

- Determine whether the drum contents and the soil within the annulus between the drum and the stainless steel cylinder contain lead and nitroaromatics at concentrations that preclude its disposal as industrial (nonhazardous) waste.

2.2.2 Soil-Filled Concrete Ring (CFA-10A)

The objective of sampling the soil in and around the concrete ring from the ground surface to a depth of 3 m (10 ft) bgs will be to answer the following question:

- PSQ: Does the soil in and around the concrete ring contain contaminants at concentrations that pose an unacceptable risk to human health and the environment?

The AAs to be taken, depending on the resolution to the PSQ, are as follows:

- AA1: If the soil in and around the concrete ring contains contaminants at concentrations that pose an unacceptable risk to human health and the environment, then further evaluation is required to determine the most appropriate action to be taken at this site.

- AA2: If the soil in and around the concrete ring does not contain contaminants at concentrations that pose an unacceptable risk to human health and the environment, then no action is required at this site.

Combining the PSQ and the AAs results in the following DS:

- Determine whether the soil in and around the concrete ring contains contaminants at concentrations that pose an unacceptable risk to human health and the environment.

2.2.3 TRA-605 Warm Waste Pipeline (TRA-63)

The objective of sampling the soil at TRA-63 will be to delineate the horizontal and vertical extent of contamination and to answer the following question:

- PSQ: Does the soil at TRA-63 contain radionuclides at concentrations that pose an unacceptable risk to human health and the environment?

The AAs to be taken, depending on the resolution to the PSQ, are as follows:

- AA1: If the soil at TRA-63 contains radionuclides at concentrations that pose an unacceptable risk to human health and the environment, then further evaluation is required to determine the most appropriate action to be taken at this site.

- AA2: If the soil at TRA-63 does not contain radionuclides at concentrations that pose an unacceptable risk to human health and the environment, then no further action is required at this site.

Combining the PSQ and the AAs results in the following DS:

- Determine whether the soil at TRA-63 contains radionuclides at concentrations that pose an unacceptable risk to human health and the environment.

2.2.4 Fenced Area North of TRA-608 (TRA-60)

The objective of sampling the soil from the ground surface to a depth of 3 m (10 ft) bgs at the base of TRA-708C (regenerant effluent neutralization tank), in the north-south trench nearest TRA-708C, along the north side of the east-west trench, and along the north side of the TRA-608 building at TRA-60 will be to answer the following question:

- PSQ: Do concentrations of lead and mercury in the soil at TRA-60 pose an unacceptable risk to human health and the environment?

The AAs to be taken, depending on the resolution to the PSQ, are as follows:

- AA1: If concentrations of lead and mercury in the soil at TRA-60 pose an unacceptable risk to human health and the environment, then further evaluation is required to determine appropriate remedial action alternatives.

- AA2: If concentrations of lead and mercury in the soil at TRA-60 do not pose an unacceptable risk to human health and the environment, then no further action is required at this site.

Combining the PSQ and the AAs results in the following DS:

- Determine whether concentrations of lead and mercury in the soil at TRA-60 pose an unacceptable risk to human health and the environment.

2.3 Inputs to the Decision

Decision inputs are the parameters required to resolve the DSs and determine which decisions require environmental measurements. Identification and quantification of hazardous constituents at MISC-33, CFA-10A, TRA-63, and TRA-60 are needed to resolve the DSs listed above. Existing data for the concentrations of hazardous constituents present in the soil at TRA-60 and TRA-63 are relevant to this investigation, because they provide the minimum list of constituents for which analyses should be performed. However, the existing data are insufficient to determine whether the soil at each of these sites contains contaminants at concentrations that pose an unacceptable risk to human health and the environment.

During this step of the DQO process, the basis for an action level is established. The action level is the threshold value that provides the criterion for choosing between AAs. Action levels may be based on regulatory thresholds or standards or they may be derived from problem-specific considerations such as risk analysis.

2.3.1 Experimental Test Drum in the EOCR-01 Leach Pond (MISC-33)

To resolve the DS, biased samples of the soil material, debris, and ash within the experimental test drum and the soil within the annulus between the drum and the stainless steel cylinder will be obtained (as described in Section 3) and submitted to an analytical laboratory. The samples will be analyzed for lead and nitroaromatics to verify whether these constituents are present in the soil at concentrations that preclude its disposal as industrial (nonhazardous) waste.

2.3.2 Soil-Filled Concrete Ring (CFA-10A)

To resolve the DS, several grab soil samples will be collected within the soil-filled concrete ring from the ground surface to a depth of 3 m (10 ft) bgs and one 5-point composite sample taken from the 0–1-ft interval will be collected from the area immediately surrounding the concrete ring (as described in Section 3) and submitted to an analytical laboratory to evaluate whether contaminated soil exists at CFA-10A. The samples will be analyzed for alpha-, beta-, and gamma-emitting radionuclides; SVOCs; TPHs; and metals to verify whether these constituents are present in the soil at concentrations that pose an unacceptable risk to human health and the environment.

2.3.3 TRA-605 Warm Waste Pipeline (TRA-63)

To resolve the DS, a biased sampling scheme (as described in Section 3) will be used to collect soil samples at TRA-63, beginning near the break in the pipeline (approximately 6 ft bgs). The vertical and

horizontal extent of radioactive soil contamination will be determined by advancing several soil borings in the area surrounding the break in the pipeline. The samples will be analyzed for alpha-, beta-, and gamma-emitting radionuclides and tritium to determine whether these constituents are present in the soil at concentrations that pose an unacceptable risk to human health and the environment.

2.3.4 Fenced Area North of TRA-608 (TRA-60)

To resolve the DS, a random sampling scheme (as described in Section 3) will be used to collect soil samples at the base of TRA-708C (regenerant effluent neutralization tank), a portion of the north-south trench nearest TRA-708C, along the north side of the east-west trench, and along the north side of the TRA-608 building at TRA-60 from the ground surface to a depth of 3 m (10 ft) bgs. The samples will be analyzed for lead and mercury to determine whether these constituents are present in the soil at concentrations that pose an unacceptable risk to human health and the environment.

2.4 Define the Study Boundaries

The purpose of this step is to define the spatial and temporal boundaries to which decisions will apply in order to clarify the sample domain. The spatial boundaries simply define the physical extent of the study area and may be subdivided into specific areas of interest. The temporal boundaries define the duration of the study or specific parts of the study. The outputs of this step are a detailed description of the spatial and temporal boundaries of the problem and a discussion of any practical constraints that could interfere with the study.

2.4.1 Experimental Test Drum in the EOCR-01 Leach Pond (MISC-33)

For activities to be conducted at MISC-33, the spatial boundaries of concern are confined to the soil material, debris, and ash within and immediately surrounding the experimental test drum and the soil within the annulus between the drum and the stainless steel cylinder. The characteristics that define the population of interest are the concentrations of lead and nitroaromatics in the soil volume identified. The FFA/CO-driven temporal boundaries do not exist for this investigation. The schedule for project activities is specified in the *Scope of Work for Waste Area Group 10 Track 2 Investigations for CFA-10A, Sites MISC-33, TRA-60, and TRA-63* (DOE/NE-ID 2004).

2.4.2 Soil-Filled Concrete Ring (CFA-10A)

For activities to be conducted at CFA-10A, the spatial boundaries of concern are confined to the soil within and around the soil-filled concrete ring from the ground surface to a depth of 3 m (10 ft) bgs. The characteristics that define the population of interest are the contaminant concentrations in the soil volume identified. Currently, the contaminants of concern have not been identified for CFA-10A. The FFA/CO-driven temporal boundaries do not exist for this investigation. The schedule for project activities is specified in the *Scope of Work for Waste Area Group 10 Track 2 Investigations for CFA-10A, Sites MISC-33, TRA-60, and TRA-63* (DOE/NE-ID 2004).

2.4.3 TRA-605 Warm Waste Pipeline (TRA-63)

For activities to be conducted at TRA-63, the spatial boundaries of concern are confined to the soil surrounding the break in the 4-in. Duriron warm wastewater pipeline near TRA-605. The characteristics that define the population of interest are the concentrations of alpha-, beta-, and gamma-emitting radionuclides and tritium in the soil volume identified. The FFA/CO-driven temporal boundaries do not exist for this investigation. The schedule for project activities is specified in the *Scope of Work for Waste*

Area Group 10 Track 2 Investigations for CFA-10A, Sites MISC-33, TRA-60, and TRA-63 (DOE/NE-ID 2004).

A practical constraint that could interfere with this investigation includes inaccessibility to sampling locations at TRA-63 due to subsurface piping in the area that could result in a slightly biased sampling design but should still allow for resolution of the DS.

2.4.4 Fenced Area North of TRA-608 (TRA-60)

For activities to be conducted at TRA-60, the spatial boundaries of concern are confined to the soil inside the fence at TRA-608 to a depth of 3 m (10 ft). The characteristics that define the population of interest are the concentrations of lead and mercury in the soil volume identified. The FFA/CO-driven temporal boundaries do not exist for this investigation. The schedule for project activities is specified in the *Scope of Work for Waste Area Group 10 Track 2 Investigations for CFA-10A, Sites MISC-33, TRA-60, and TRA-63* (DOE/NE-ID 2004).

A practical constraint that could interfere with this investigation includes inaccessibility to sampling locations inside the fence at TRA-608 that could result in a slightly biased sampling design but should still allow for resolution of the DS.

2.5 Develop a Decision Rule

The purpose of this step is to define the statistical parameters of interest, specify action levels, and integrate any previous DQO inputs into a single statement that describes a logical basis for choosing among AAs.

The decision rule is an "if . . .then . . ." statement—describing the action to take if one or more conditions are met—that combines the parameter of interest, the scale of decision-making, the action level, and the action(s) that would result from resolution of the decision.

2.5.1 Experimental Test Drum in EOCR-01 Leach Pond (MISC-33)

The decision rules associated with the experimental test drum in the EOCR-01 leach pond (MISC-33) are described below:

- **If** analytical laboratory results from soil sampling show that the drum contents and the soil within the annulus between the drum and the stainless steel cylinder and immediately surrounding the cylinder contain lead and nitroaromatics at concentrations that preclude its disposal as industrial (nonhazardous) waste, **then** these materials will need to be removed from the leach pond and disposed of as hazardous waste

- **If** analytical laboratory results from soil sampling show that the drum contents and the soil within the annulus between the drum and the stainless steel cylinder and immediately surrounding the cylinder do not contain lead and nitroaromatics at concentrations that preclude its disposal as industrial (nonhazardous) waste, **then** the drum and its contents may be disposed of as industrial (nonhazardous) waste.

2.5.2 Soil-Filled Concrete Ring (CFA-10A)

The decision rules associated with the soil-filled concrete ring (CFA-10A) are described below:

- **If** the soil in and around the concrete ring contained contaminants at concentrations that pose an unacceptable risk to human health and the environment, **then** further evaluation is required to determine the most appropriate action to be taken at this site

- **If** the soil in and around the concrete ring does not contain contaminants at concentrations that pose an unacceptable risk to human health and the environment, **then** no action is required at this site.

2.5.3 TRA-605 Warm Waste Pipeline (TRA-63)

The decision rules associated with the TRA-605 warm waste pipeline (TRA-63) are described below:

- **If** the soil at TRA-63 contains radionuclides at concentrations that pose an unacceptable risk to human health and the environment, **then** further evaluation is required to determine the most appropriate action to be taken at this site

- **If** the soil at TRA-63 does not contain radionuclides at concentrations that pose an unacceptable risk to human health and the environment, **then** no action is required at this site.

2.5.4 Fenced Area North of TRA-608 (TRA-60)

The decision rules associated with the fenced area north of TRA-608 (TRA-60) are described below:

- **If** concentrations of lead and mercury in the soil at TRA-60 pose an unacceptable risk to human health and the environment, **then** further evaluation is required to determine appropriate remedial action alternatives

- **If** concentrations of lead and mercury in the soil at TRA-60 do not pose an unacceptable risk to human health and the environment, **then** no action is required at this site.

2.6 Specify Tolerable Limits on Decision Errors

Since analytical data can only provide an estimate of the true condition of a site, decisions that are based on such data could potentially be in error. The purpose of this step is to minimize uncertainty in the data by defining tolerable limits on decision errors that are used to establish performance goals for the data collection design.

The decision-maker must define acceptable limits on the probability of making a decision error. The possibility of decision error cannot be eliminated, but controlling the total study error can minimize it. Methods for controlling total study error include collecting a sufficient number of samples (to control sampling design error), analyzing individual samples several times, or using more precise analytical methods (to control measurement error). Therefore, it is necessary to determine the possible range for the parameter of interest and to define both the types of decision errors and the potential consequences of the errors.

2.6.1 Experimental Test Drum in EOCR-01 Leach Pond (MISC-33)

The two types of decision errors that could occur with regard to the experimental test drum in the EOCR-01 leach pond (MISC-33) are described below:

- Determining that lead and nitroaromatics are present in the soil material, debris, and ash within the experimental test drum and the soil within the annulus between the drum and the stainless steel cylinder and immediately surrounding the cylinder at concentrations that preclude its disposal as industrial (nonhazardous) waste (when in fact they are not), which would result in the unnecessary disposal as a hazardous waste. This would result in further expenditure of project resources to complete unnecessary activities and the potential for generation of unnecessary waste in the form of unnecessary removal activities.

- Determining that lead and nitroaromatics are not present in the soil material, debris, and ash within the experimental test drum and the soil within the annulus between the drum and the stainless steel cylinder and immediately surrounding the cylinder at concentrations that preclude its disposal as industrial (nonhazardous) waste (when in fact they are), resulting in the assumption that the waste is nonhazardous. This could result in Resource Conservation and Recovery Act (RCRA) compliance issues and failure to protect human health and the environment.

Because biased samples of the soil material, debris, and ash within the experimental test drum and the soil within the annulus between the drum and the stainless steel cylinder and immediately surrounding the cylinder will be obtained, statistically based decision error limits (Types 1 and 2) are not appropriate. In addition, historical data specify the contents of the experimental test drum and will be used in association with analytical data from this investigation to determine proper classification and disposal of the waste.

2.6.2 Soil-Filled Concrete Ring (CFA-10A)

The two types of decision errors that could occur with regard to the soil-filled concrete ring (CFA-10A) are described below:

- Determining that contaminants are present within and around the soil-filled concrete ring from the ground surface to a depth of 3 m (10 ft) bgs at concentrations that pose an unacceptable risk to human health and the environment (when in fact they are not), which would result in collection of unnecessary additional samples to characterize the materials, resulting in further expenditure of project resources to complete unnecessary activities and the potential for generation of unnecessary waste in the form of unnecessary removal activities.

- Determining that contaminants are not present within and around the soil-filled concrete ring from the ground surface to a depth of 3 m (10 ft) bgs that pose an unacceptable risk to human health and the environment (when in fact they are), which would result in the assumption that no further action is required at the site. This could result in CERCLA compliance issues and failure to protect human health and the environment.

Biased composite soil samples will be collected within and around the soil-filled concrete ring from the ground surface to a depth of 3 m (10 ft) bgs. Because biased samples of the soil will be obtained, statistically based decision error limits (Types 1 and 2) are not appropriate.

2.6.3 TRA-605 Warm Waste Pipeline (TRA-63)

The two types of decision errors that could occur with regard to the TRA-605 warm waste pipeline (TRA-63) are described below:

- Determining that alpha-, beta-, and gamma-emitting radionuclides and tritium are present in the area surrounding the break in the pipeline at concentrations that pose an unacceptable risk to human health and the environment (when in fact they are not), which would result in collection of unnecessary additional samples to characterize the materials, resulting in further expenditure of project resources to complete unnecessary activities and the potential for generation of unnecessary waste in the form of unnecessary removal activities.

- Determining that alpha-, beta-, and gamma-emitting radionuclides and tritium are not present in the area surrounding the break in the pipeline at concentrations that pose an unacceptable risk to human health and the environment (when in fact they are), which would result in the assumption that no further action is required at the site. This could result in CERCLA compliance issues and failure to protect human health and the environment.

A biased sampling scheme will be used to collect soil samples at TRA-63, beginning near the break in the pipeline (approximately 6 ft bgs). Because biased sampling will be conducted at this site, statistically based decision error limits (Types 1 and 2) are not appropriate. Instead, uncertainty will be reduced by using instrumentation to determine areas of highest contamination, and these locations will be sampled. The sampling design is discussed further in Section 3.

2.6.4 Fenced Area North of TRA-608 (TRA-60)

The two types of decision errors that could occur with regard to the fenced area north of TRA-608 (TRA-60) are described below:

- Determining that lead and mercury are present at the base of TRA-708C (regenerant effluent neutralization tank), a portion of the north-south trench nearest TRA-708C, along the north side of the east-west trench, and along the north side of the TRA-608 building at TRA-60 from the ground surface to a depth of 3 m (10 ft) bgs at concentrations that pose an unacceptable risk to human health and the environment (when in fact they are not), resulting in collection of unnecessary additional samples to characterize the materials. This would result in further expenditure of project resources to complete unnecessary activities and the potential for generation of unnecessary waste in the form of unnecessary removal activities.

- Determining that lead and mercury are not present at the base of TRA-708C (regenerant effluent neutralization tank), a portion of the north-south trench nearest TRA-708C, along the north side of the east-west trench, and along the north side of the TRA-608 building at TRA-60 from the ground surface to a depth of 3 m (10 ft) bgs at concentrations that pose an unacceptable risk to human health and the environment (when in fact they are), resulting in the assumption that no further action is required at the site. This could result in CERCLA compliance issues and failure to protect human health and the environment.

A systematic sampling scheme will be used to collect soil samples at the base of TRA-708C (regenerant effluent neutralization tank), a portion of the north-south trench nearest TRA-708C, along the north side of the east-west trench, and along the north side of the TRA-608 building at TRA-60 from the ground surface to a depth of 3 m (10 ft) bgs. Therefore, statistically based decision errors are not appropriate for TRA-60. Previous sampling activities were conducted and maps are available that show

the previous sample locations. In addition, analytical data are available that provide the concentrations of contaminants at the identified sample points. Therefore, the most likely areas in which the highest contamination was detected can be reconstructed. The information gathered in this investigation will be used to evaluate the risk associated with the levels of lead and mercury contamination in the soil at TRA-60 and to evaluate remedial action alternatives.

2.7 Optimize the Design

The purpose of design optimization in the DQO process is to evaluate information from the previous steps, generate alternative data collection design options that will provide the data needed for the desired analysis, and select the most resource-effective design that meets all DQOs. The activities involved in design optimization include:

- Reviewing the outputs of the first six steps and existing environmental data
- Developing general data collection design alternatives
- Formulating a mathematical expression needed to solve the design problem for each data collection design alternative
- Selecting the optimal number of samples to satisfy the DQOs for each data collection design alternative
- Selecting the most resource-effective data collection design that satisfies all the DQOs.

After these activities are completed, the operational details and theoretical assumptions of the selected design are documented in the FSP. Several designs were considered during development of this FSP. The details proposed in Section 3 are the designs projected to meet project resource availability while satisfying the DQOs.

3. SAMPLE LOCATION

The purpose of this section is to present sampling locations at each of the four CERCLA sites being studied in this Track 2 investigation. Figures and tables indicating sample locations are included.

3.1 Experimental Test Drum in EOCR-01 Leach Pond (MISC-33)

Based on the information provided in the New Site Identification for MISC-33 and DQO requirements, samples will be collected at MISC-33 to characterize the ash within the drum itself, the soil within the annulus between the drum and stainless steel cylinder, and the soil immediately surrounding the drum (Figure 3-1). The ash sample from within the drum and the soil sample from the annulus between the drum and cylinder will both be collected as grab samples taken at least 18 in. below the surface of the ash and soil. If the ash or soil depths within the drum or cylinder are less than 18 in., then the sample will be taken from as close as possible to the bottom of the drum or cylinder. The soil immediately surrounding the cylinder will be collected as a 5-point composite sample. Each subsample shall be located within 1 ft of the drum, with all five subsamples evenly spaced around the drum. Composite subsamples will be taken from the 0- to 1-ft interval. The exact location of each sampling point will be measured and recorded using a known reference point, a Global Positioning System, or located using standard surveying techniques.

3.2 Soil-Filled Concrete Ring (CFA-10A)

In order to satisfy DQO requirements, soil within and immediately surrounding the soil-filled concrete ring will be sampled (Figure 3-2). Grab samples will be taken from the center of the concrete ring at the following depth intervals: 0 to 2 ft, 4 to 6 ft, and 8 to 10 ft, unless refusal is met before 10 ft bgs. The soil immediately surrounding the concrete ring will be collected as a 5-point composite sample. Each subsample shall be located within 1 ft of the concrete ring with all five subsamples evenly spaced around the concrete ring. Composite subsamples will be taken from the 0- to 1-ft interval.

3.3 TRA-605 Warm Waste Pipeline (TRA-63)

In order to satisfy DQO requirements, soil surrounding the break in the TRA-605 warm waste pipeline will be sampled. A minimum of four soil borings, by means of hollow-stem auger and split-spoon sampling, are planned. The first boring will be located as close as possible to the break in the warm waste line and will serve to provide the vertical delineation of radioactive soil contamination. The remaining four borings will be located to the south of the break in the warm waste line as indicated in Figure 3-3. All borings will be sampled at 5-ft intervals (beginning at 5 ft bgs) and screened in the field for radioactivity. The borings will be advanced and screened as such until refusal is met at the alluvium/basalt interface, which is expected to occur at 40 to 50 ft bgs. Three samples from each boring will be submitted for laboratory analyses. The samples will be chosen based on the field screening data; those three exhibiting the highest radioactivity will be submitted. If no radioactivity is present or if all samples possess equal field-screening values, then the following intervals will be submitted for laboratory analyses: 5 to 7 ft, 25 to 27 ft, and 40 to 42 ft (or the deepest interval reached). If radioactive soil contamination is still present based on field screening results, then further evaluation will be required. The exact location of each sampling point will be measured and recorded using a known reference point, a Global Positioning System, or located using standard surveying techniques.

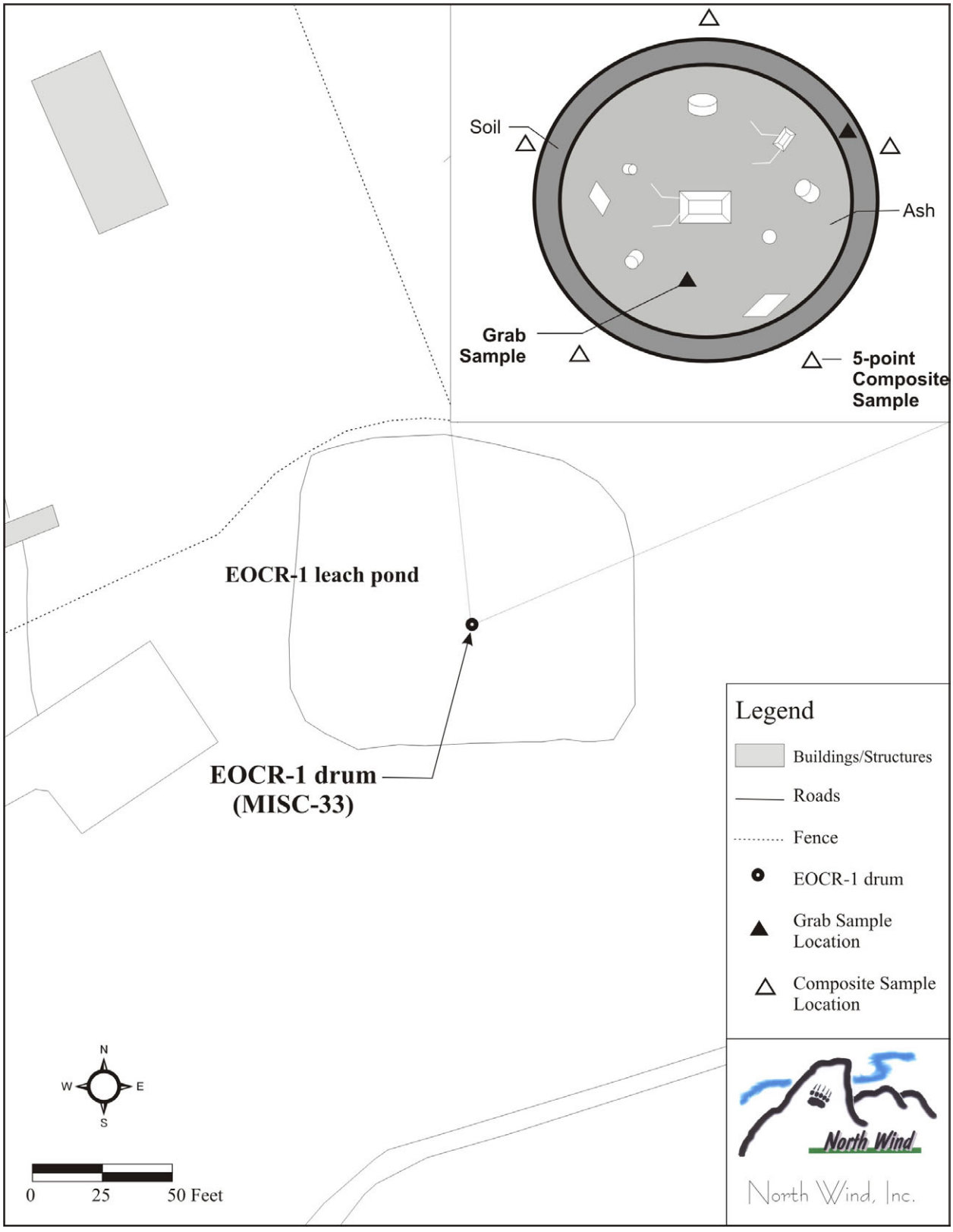

Figure 3-1. The MISC-33 sample locations.

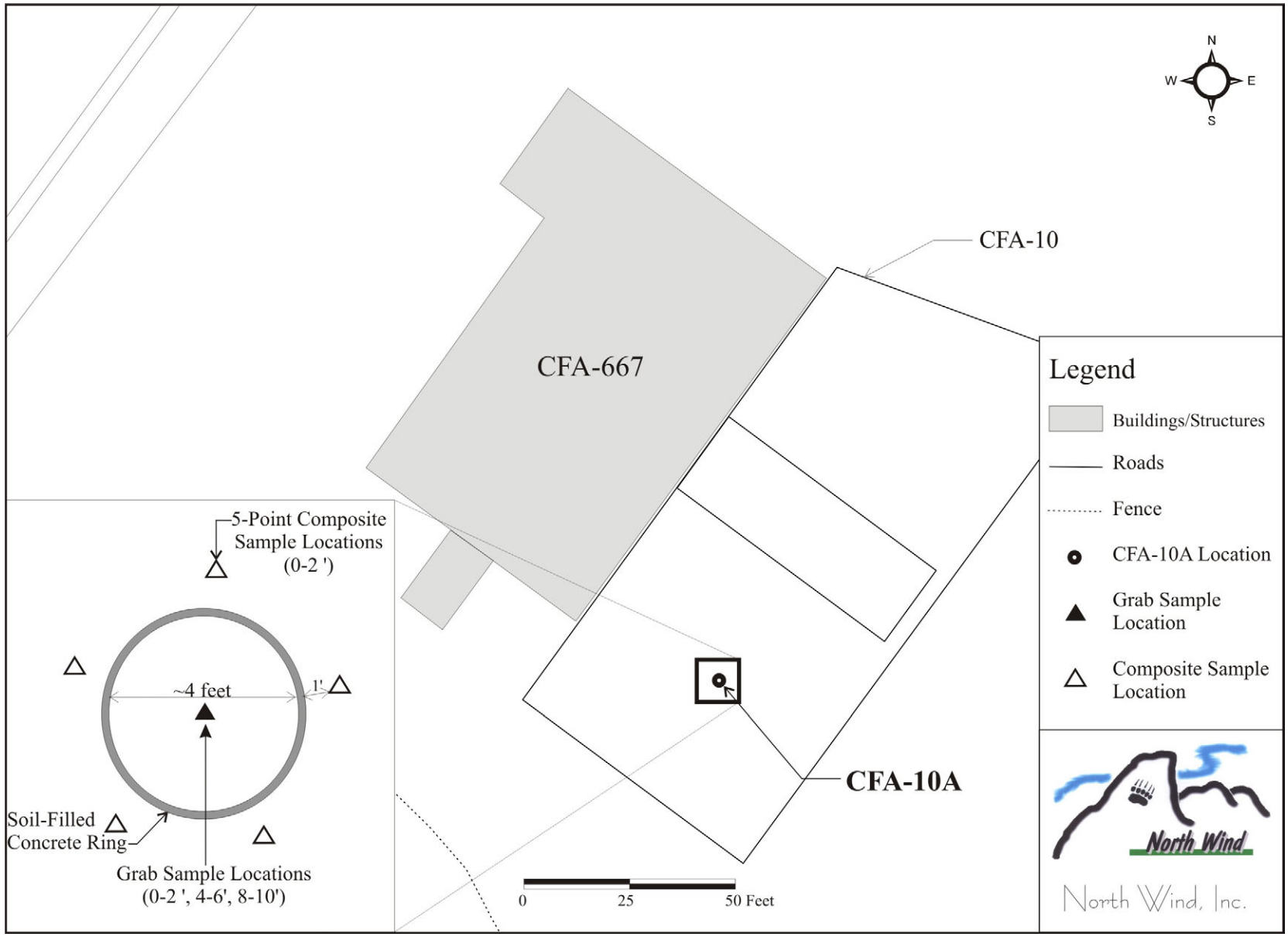

Figure 3-2. The CFA-10A sample locations.

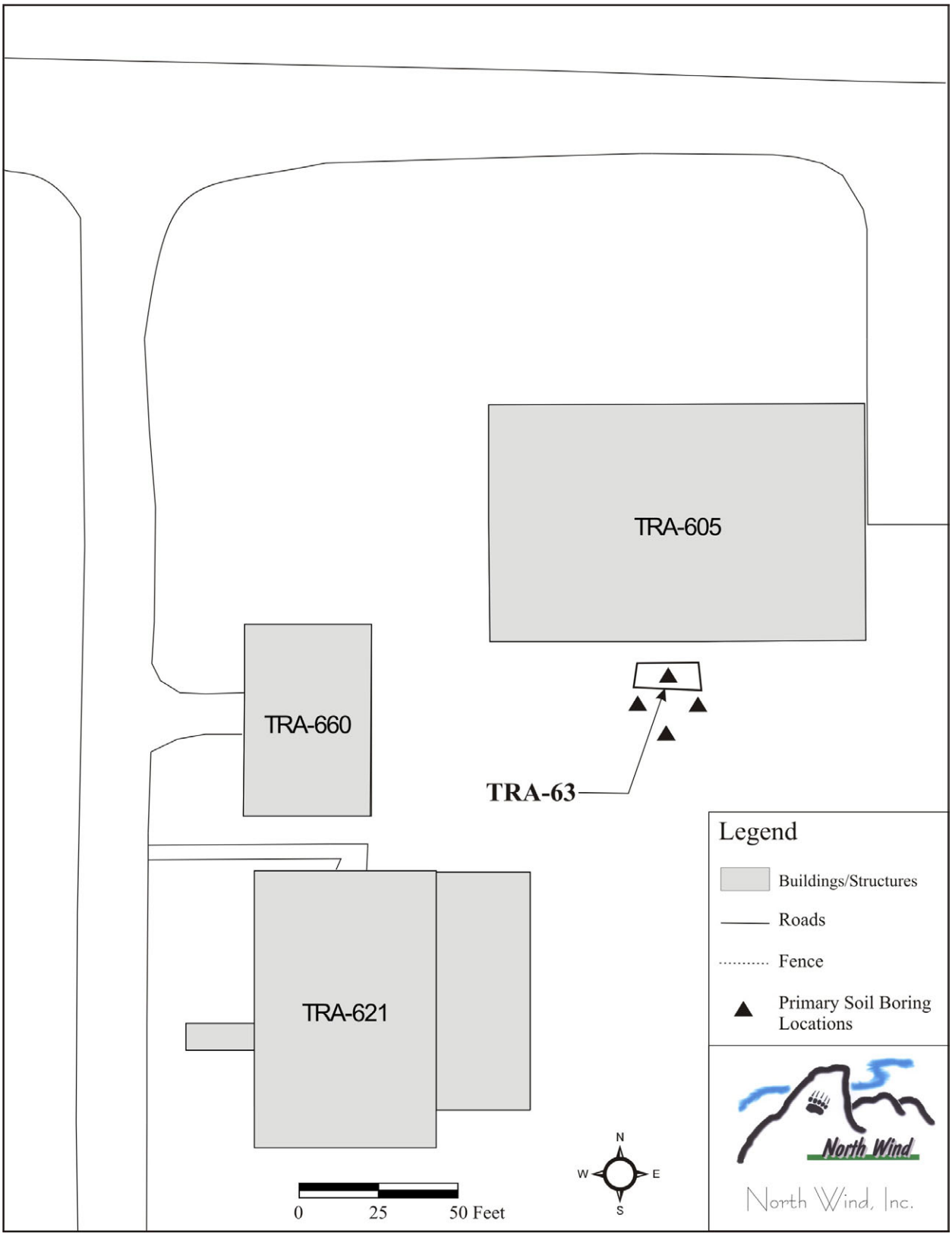

Figure 3-3. The TRA-63 sample locations.

Certain practical constraints (which include underground obstructions such as buried utility lines, pipes, etc.) will pose problems for the current field sampling design. Before commencement of fieldwork, it will be necessary to conduct a survey of the study area to locate all utility lines. In addition, the break in the warm waste pipeline will need to be located with a combination of backhoe and hand digging. The proposed soil boring locations will then have to be "field-fit" to avoid encountering the underground obstructions.

3.4 Fenced Area North of TRA-608 (TRA-60)

In order to satisfy DQO requirements, soil within the fenced area north of TRA-608 will be sampled. A total of 23 soil borings, by means of hollow-stem auger and split-spoon sampling, are planned. The soil boring locations are illustrated in Figure 3-4. Each soil boring will be sampled at three intervals: 0 to 2 ft, 4 to 6 ft, and 8 to 10 ft. The sample locations were chosen for this study based on identification of gaps in the historical data set.

Certain practical constraints (which include underground obstructions such as buried utility lines, pipes, etc.) could pose problems for the current field sampling design. Before commencement of fieldwork, it might be necessary to conduct a survey of the study area to locate all utility lines. The proposed soil boring locations will then have to be "field-fit" to avoid encountering the underground obstructions.

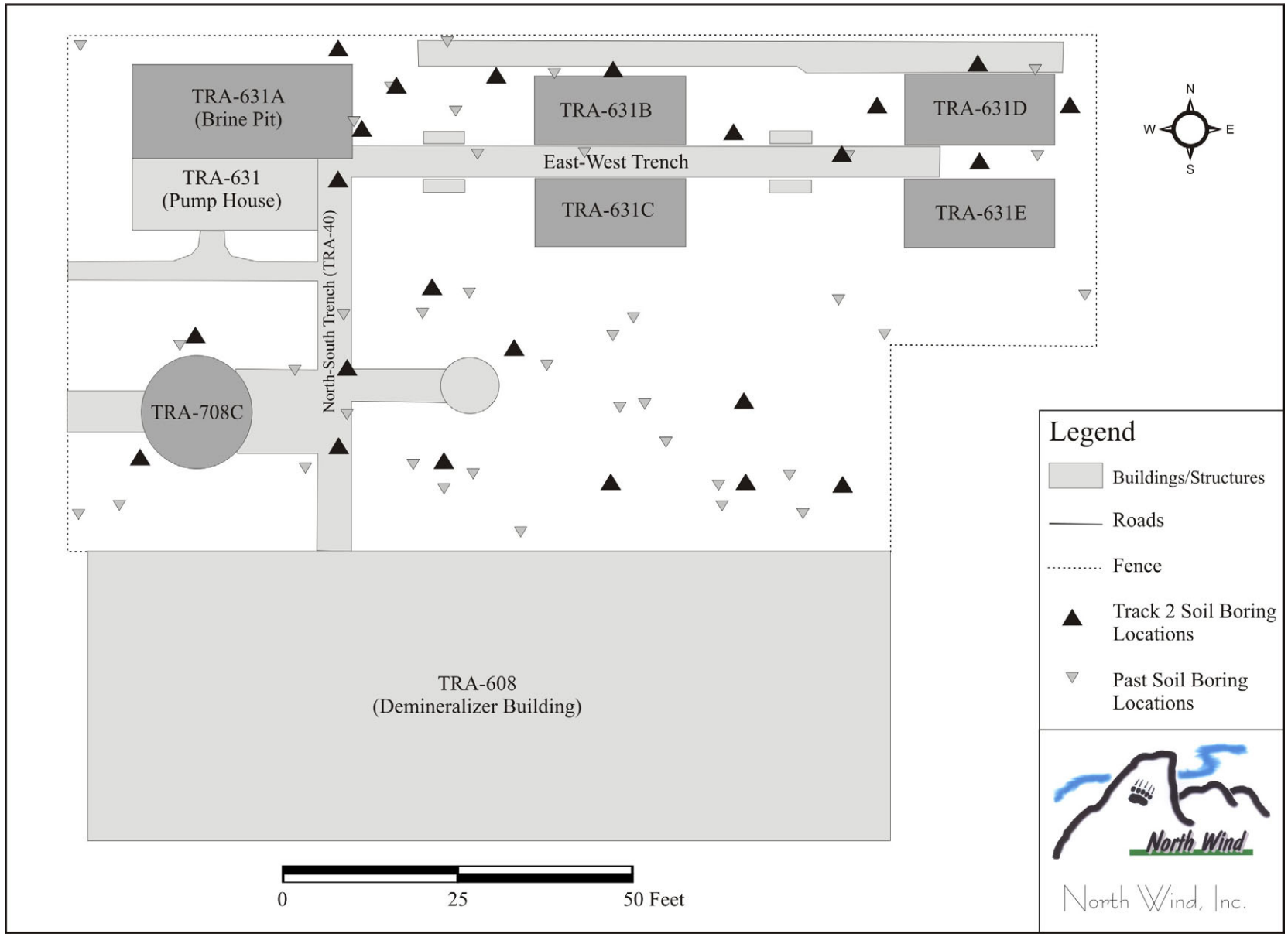

Figure 3-4. The TRA-60 sample locations.

4. SAMPLE EQUIPMENT AND DOCUMENTATION

4.1 Sample Equipment and Supplies

The following is a list of sample equipment and supplies using guidance outlined in Program Requirements Document (PRD) –5030, "Environmental Requirements for Facilities, Processes, Materials, and Equipment," and MCP-3480, "Environmental Instructions for Facilities, Processes, Materials, and Equipment." Although exhaustive, this list should be used only as a guide. Safety equipment and supplies are not included in this list. Those items will be listed in the project-specific health and safety plan.

- Sample labels and custody seals
- ER Program chain of custody forms (Form 435.20)
- Radiological properties labels (if required)
- Insulated sample coolers
- Blue or dry ice
- Bubble wrap
- Laboratory-prepared trip blanks (if volatile organic compounds are parameters of interest)
- U.S. Department of Energy (DOE) material hazard labels
- Plastic strapping tape
- Re-sealable plastic bags
- Plastic garbage bags
- Duct tape
- Address labels
- "THIS SIDE UP" labels
- Indelible marking pens
- Scissors or knife
- Form 460.01, "Requests for Shipments/Transfer of Property"
- Shipping document forms
- Sample/shipping logbooks.

4.2 Sample Designation

The Sample and Analysis Management Program (which was formerly called the Sample Management Office) has assigned a unique 10-character identifier to each sample collected during this Track 2 investigation. The first three characters are either TRA or CFA. The fourth, fifth, sixth, seventh, and eighth characters identify the sample location and the sequence of sampling (if collocated duplicates are taken from a single location). The ninth and tenth characters identify the type of analyses being performed on that sample. If additional samples are collected in the field, then the field team leader (FTL) must ensure that the identification scheme described in this section is used.

4.3 Sample Documentation and Management

The FTL will control and maintain all field documents and records and submit the required documents to the Administrative Record and Document Control Office at the conclusion of the project. Sample documentation, shipping, and custody procedures for this project are based on U.S. Environmental Protection Agency (EPA)-recommended procedures that emphasize careful documentation of sample collection and sample transfer. The appropriate information pertaining to each sample will be recorded in accordance with MCP-1194, "Logbook Practices for ER and D&D&D Projects," and the QAPjP (DOE-ID 2004a). The person designated to complete the sample or FTL logbook will record items such as presampling safety meeting notes, weather, and general project notes in the logbook, as appropriate. Proper handling, management, and disposal of samples under control of the INEEL management and operations contractor, or their subcontractors, are essential. All personnel involved with handling, managing, or disposing of samples will be trained in accordance with MCP-3480, "Environmental Instructions for Facilities, Processes, Materials, and Equipment," and PRD–5030, "Environmental Requirements for Facilities, Processes, Materials, and Equipment," and all samples will be dispositioned in accordance with MCP-3480 and PRD-5030.

If it becomes necessary to revise these documents, a Document Action Request (Form 412.11) will be executed in accordance with MCP-233, "Process for Developing, Releasing, and Distributing ER Documents (Supplemental to MCP-135 and MCP-9395)." Document Action Requests could include additional analyses that are necessary to meet appropriate waste acceptance criteria.

5. SAMPLE HANDLING AND ANALYSIS, WASTE DISPOSAL, AND WASTE MINIMIZATION

5.1 Sample Handling and Analysis

Samples will be handled in accordance with the QAPjP (DOE-ID 2004a). The maximum holding times for samples are presented in the QAPjP for each analytical parameter. Careful coordination of sampling and shipping among the INEEL Sample and Analysis Management Program, FTL, and the laboratory project manager is required to ensure that holding times are met. The analyses required for this project are listed in Table 5-1.

Table 5-1. Selected analyte list for Waste Area Group 10 Track 2 sites.

Analyte/Site	Analytical Method
Experimental Test Drum in EOCR-01 Leach Pond (MISC-33)	
Lead	EPA Method 6010B
Nitroaromatics	EPA Method 8095
Soil-Filled Concrete Ring (CFA-10A)	
SVOC	EPA Method 8270C
TPH	EPA Method 8015B
Antimony	EPA Method 6010B
Arsenic	EPA Method 6010B
Barium	EPA Method 6010B
Beryllium	EPA Method 6010B
Cadmium	EPA Method 6010B
Chromium	EPA Method 6010B
Lead	EPA Method 6010B
Mercury	EPA Method 7471A
Nickel	EPA Method 6010B
Selenium	EPA Method 6010B
Silver	EPA Method 6010B
Thallium	EPA Method 6010B
Alpha	EPA Method 900.0/9310
Beta	EPA Method 900.0/9310
Gamma	EPA Method 901.1
TRA-605 Warm Waste Pipeline (TRA-63)	
Alpha	EPA Method 900.0/9310
Beta	EPA Method 900.0/9310
Gamma	EPA Method 901.1
Tritium	EPA Method 906.0
Fenced Area North of TRA-608 (TRA-60)	
Lead	SW-846 Method 6010B
Mercury	CVAA SW-846 Method 7471A

CFA = Central Facilities Area
EOCR = Experimental Organic-Cooled Reactor
EPA = U.S. Environmental Protection Agency
SVOC = semivolatile organic compound
TPH = total petroleum hydrocarbon
TRA = Test Reactor Area

All containers will be precleaned (usually certified by the manufacturer) using the appropriate EPA-recommended cleaning protocols for the bottle type and sample analysis. Extra containers will be available in case of breakage, contamination, or the need to collect additional samples. Preprinted labels will be affixed to the sample containers before use and will contain the name of the project, sample identification number, location, depth, and requested analysis. Following collection, the date and time of collection and the sample technician's initials will be recorded on the sample label with a waterproof black marker. The samples will be placed in coolers with blue or dry ice, if required, while awaiting preparation and shipment to the appropriate laboratory. Samples will be prepared and packaged in accordance with MCP-3480, "Environmental Instructions for Facilities, Processes, Materials, and Equipment."

Based on process knowledge, radioactivity is only expected in soil at TRA-63. However, radiological control technicians will screen samples from all sites to determine if the samples meet the release criteria for unrestricted use. If a sample does not meet these criteria, it will be subjected to a 20-minute gamma screen to determine the concentration of radionuclides present and the hazardous material classification for shipping purposes, if necessary. The Radiation Measurements Laboratory at TRA will perform the gamma screening. All materials will be shipped to the laboratories by a company-certified hazardous materials shipper in accordance with U.S. Department of Transportation regulations and current company policy.

5.2 Waste Disposal

Waste storage and disposal will be coordinated with the appropriate Waste Generator Services (WGS) interface to ensure compliance with applicable waste characterization, treatment, and disposal regulations. This includes writing a hazardous waste determination (Form 435.39) before treatment or disposal of any solid waste from this project. In addition, record keeping will be conducted in accordance with MCP-557, "Managing Records." The investigation-derived waste (IDW) produced during sampling will include personal protective equipment (PPE), sampling supplies, drill cuttings, and decontamination water. For each waste stream produced, a hazardous waste determination will be performed and documented before disposal of the waste. Specific company requirements and guidance on waste and excess material management can be found in the *Waste Certification Plan for the Environmental Restoration Program* (Jones 1996), the *Idaho National Engineering and Environmental Laboratory Waste Acceptance Criteria* (DOE-ID 2004b), and MCP-3472, "Identification and Characterization of Environmentally Regulated Waste."

5.2.1 Solid Waste Management

Solid waste generated during the sampling activities includes PPE trash and miscellaneous trash (i.e., wipes and packaging). Waste that does not come into direct contact with the sampled media or sampling equipment can be disposed of as nonconditional "cold" waste at the CFA landfill complex unless beta/gamma radiation and/or contamination above INEEL release criteria are detected.

All PPE and other disposable material directly used in sampling and decontamination will be bagged, sampled, and placed in containers recommended by WGS. Containers will be labeled "CERCLA IDW" under the direction of WGS and stored at the site inside the CERCLA waste storage unit until analytical results are received for the waste. At that time, the proper disposition of the waste will be coordinated with WGS.

In the event that nonhazardous, radioactive waste is generated, it will be disposed of at the Radioactive Waste Management Complex, the Waste Experimental Reduction Facility, or the INEEL CERCLA Disposal Facility. Individual waste streams destined for disposal at any of these facilities will be approved for disposal in accordance with INEEL criteria.

5.2.2 Soil-Specific Waste Management

Off-Site laboratories will dispose of both altered and unaltered samples as contractually required. The Sample and Analysis Management Program may use the U.S. Department of Energy Idaho Operations Office (DOE-ID) analytical service make-buy policy to determine that the on-Site laboratories will be used for this project. On-Site laboratories do not dispose of soil samples. Generally, returned samples should be restored to the collection site. To accomplish this, in addition to an approved hazardous waste determination, the return of the sample must be consistent with the final remedy of the site. Only unused, unaltered samples in the original containers will be accepted in the event that the samples must be returned from the laboratory. These samples will be managed in accordance with MCP-3470, "RCRA 90-Day Storage Areas," and will be treated and disposed of in accordance with regulations based on the concentrations detected. Disposition of samples that are returned from the laboratory and that cannot be restored to a collection site will be coordinated with the appropriate WGS interface to ensure compliance with applicable waste characterization treatment and disposal regulations. The laboratories are not expected to return any of the samples; however, all samples are expected to be eligible for return to the collection site.

Decontamination solutions used in small quantities may include deionized water, detergent, and isopropanol. It is anticipated that decontamination fluids that require containment will not be generated during sampling. Excess deionized water, detergent, and isopropanol will be allowed to drain onto the ground near the feature that is being sampled. Using spray bottles to apply the fluids will minimize the amount of decontamination fluids produced.

5.3 Waste Minimization

As part of the prejob briefing, waste reduction philosophies and techniques will be emphasized and personnel will be encouraged to continuously attempt to improve methods. No one will use, consume, spend, or expend equipment or materials thoughtlessly or carelessly. Practices to be instituted to support waste minimization include, but are not limited to, the following:

- Restrict material (especially hazardous material) entering the control zones to that needed for performance of work
- Substitute recyclable or burnable items for disposable items
- Reuse items when practical
- Segregate contaminated from uncontaminated waste
- Segregate reusable items such as PPE and tools.

6. QUALITY

The objective of this investigation is to provide sufficient characterization information to fill the identified data gaps. Data collected will be of sufficient quality and quantity to serve as inputs to the final comprehensive baseline risk assessment for the WAG 10 Track 2 Summary Report.

This FSP is used in conjunction with the QAPjP (DOE-ID 2004a). These documents present the functional activities, organizations, and quality assurance/quality control (QA/QC) protocols necessary to achieve the specified DQOs. The QAPjP and the FSP together constitute the sampling and analysis plan for WAG 10 sites evaluated under this Track 2 investigation. Project-specific quality requirements not addressed in the QAPjP or elsewhere in this document are discussed below.

6.1 Quality Control Sampling

As outlined in Section 2, the objectives of this investigation vary depending on which site is being studied. The purpose of collecting and analyzing QA/QC samples is to allow for the acceptability of the bias and precision of the data in addition to the mean concentrations to be evaluated. The number and type of QA/QC samples required during remedial investigations are specified in the QAPjP. The specific QA/QC requirements for this project are discussed below.

6.1.1 Duplicate Samples

Duplicate samples will be collected in accordance with the QAPjP (DOE-ID 2004a). At least one duplicate sample will be collected per 20 samples collected for each analysis type.

6.1.2 Quality Assurance and Quality Control Sampling

As outlined in the QAPjP (DOE-ID 2004a), QA objectives are specified so that the data produced are of a known and sufficient quality for determining whether a risk to human health or the environment exists. Minimum precision, accuracy, completeness of measurements, and method detection limits are quantitative objectives specified in the QAPjP. Producing data that are representative and comparable are qualitative objectives. During the sampling discussed in this plan, duplicate samples and field and equipment blanks will be collected and analyzed to evaluate sample variability and measurement bias. The collected duplicate samples will be analyzed for the same suite of analytes as regular samples. The QA/QC samples to be collected and the planned analyses are shown in Appendix A.

6.2 Quality Assurance Objectives

As outlined in the QAPjP (DOE-ID 2004a), QA objectives are specified so that the data produced are of a known and sufficient quality for determining whether a risk to human health or the environment exists. Minimum precision, accuracy, completeness of measurements, and method detection limits are quantitative QA objectives specified in the QAPjP. Producing data that are representative and comparable are qualitative QA objectives.

6.2.1 Precision and Accuracy

The precision of the entire WAG 10 Track 2 data set will be qualitatively assessed based on the results of duplicate samples. Laboratory precision and accuracy are part of the data validation criteria against which the results are evaluated. In general, bias (accuracy) in the field is difficult to assess and will be qualitatively evaluated in this investigation based on the results of the field and equipment blanks.

6.2.2 Method Detection Limits

The method detection limits for all samples collected will be consistent with the QAPjP (DOE-ID 2004a).

6.2.3 Critical Samples

Critical samples specified for soil sampling will be collected from areas in which evidence suggests that contamination is present. Only two of the sites in this investigation have documented contaminant releases (TRA-60 and TRA-63). At least four critical samples will be designated from the surface sample locations at TRA-60 where contamination is known to be present from previous investigations. At least one critical sample will be collected below the break in the 4-in. Duriron warm wastewater pipeline at TRA-63. In addition, at least one critical sample will be collected at each of the remaining two sites (MISC-33 and CFA-10A).

6.2.4 Representativeness

The representativeness of the data will be evaluated by confirming whether the sampling designs were adhered to and the DQOs were met.

6.2.5 Comparability

An evaluation of the sampling design, sampling procedures, sample handling, and laboratory analyses for each sample will be included in the assessment of data comparability. If consistently applied for all samples, then the data are comparable. Other methods to ensure comparability of data to other environmental restoration (ER) data are use of the standard QAPjP, use of common analytical methods, reporting in comparable units of measurement, and use of standard data validation and data management practices.

6.2.6 Completeness

Completeness is the measure of the quantity of the usable data that have been collected during an investigation. A goal of 100% must be achieved for critical samples (DOE-ID 2004a).

6.3 Data Validation, Reduction, and Reporting

For any data that are acquired from new samples collected during the conduct of this investigation, data will be acquired, processed, and controlled before input to the Integrated Environmental Data Management System in accordance with MCP-3480 and PRD-5030. For each sample delivery group, a data limitations and validation report (which includes copies of chain-of-custody forms, sample results, and validation flags) will be generated. All data limitations and validation reports associated with a site will be transmitted to the EPA and Idaho Department of Environmental Quality. All definitive data will be uploaded to the Environmental Data Warehouse. The results of the complete data reduction and interpretation (including QA/QC results) will be provided in the summary report.

The Sample and Analysis Management Program will validate the data to the levels of analytical method data validation Level A, which is defined in Guide (GDE)–7003, “Levels of Analytical Method Data Validation.” The analytical method data validation will be conducted in accordance with GDE-201, “Inorganic Analyses Data Validation for INEEL Sample and Analysis Management”; GDE-205, “Radioanalytical Data Validation”; GDE-239, “Validation of Volatile Organic Compounds Data Analyzed Using Gas Chromatography/Mass Spectrometry”; and GDE-240,” Validation of Gas and

Liquid Chromatographic Organic Data." Validated data are entered in the Integrated Environmental Data Management System and uploaded to the Environmental Data Warehouse.

For review of historical data, the Track 2 Summary Report will include information concerning the data used. This report will include a discussion of limitations on the ability to evaluate the data due to the Statement of Work used to define the requirements to the laboratory. Often, waste characterization activities require less QC data reporting than analyses conducted under INEEL Sample and Analysis Management Program contracts. This does not imply that the data are not usable for their intended purpose; it is discussed to ensure that data comparability is adequately addressed in the report.

7. PROJECT ORGANIZATION

The project organization and individuals associated with this investigation are shown in Figure 7-1. Responsibilities for these and additional personnel are described in the *Health and Safety Plan for the Waste Area Group 10 Track 2 Investigation Sites* (ICP 2004).

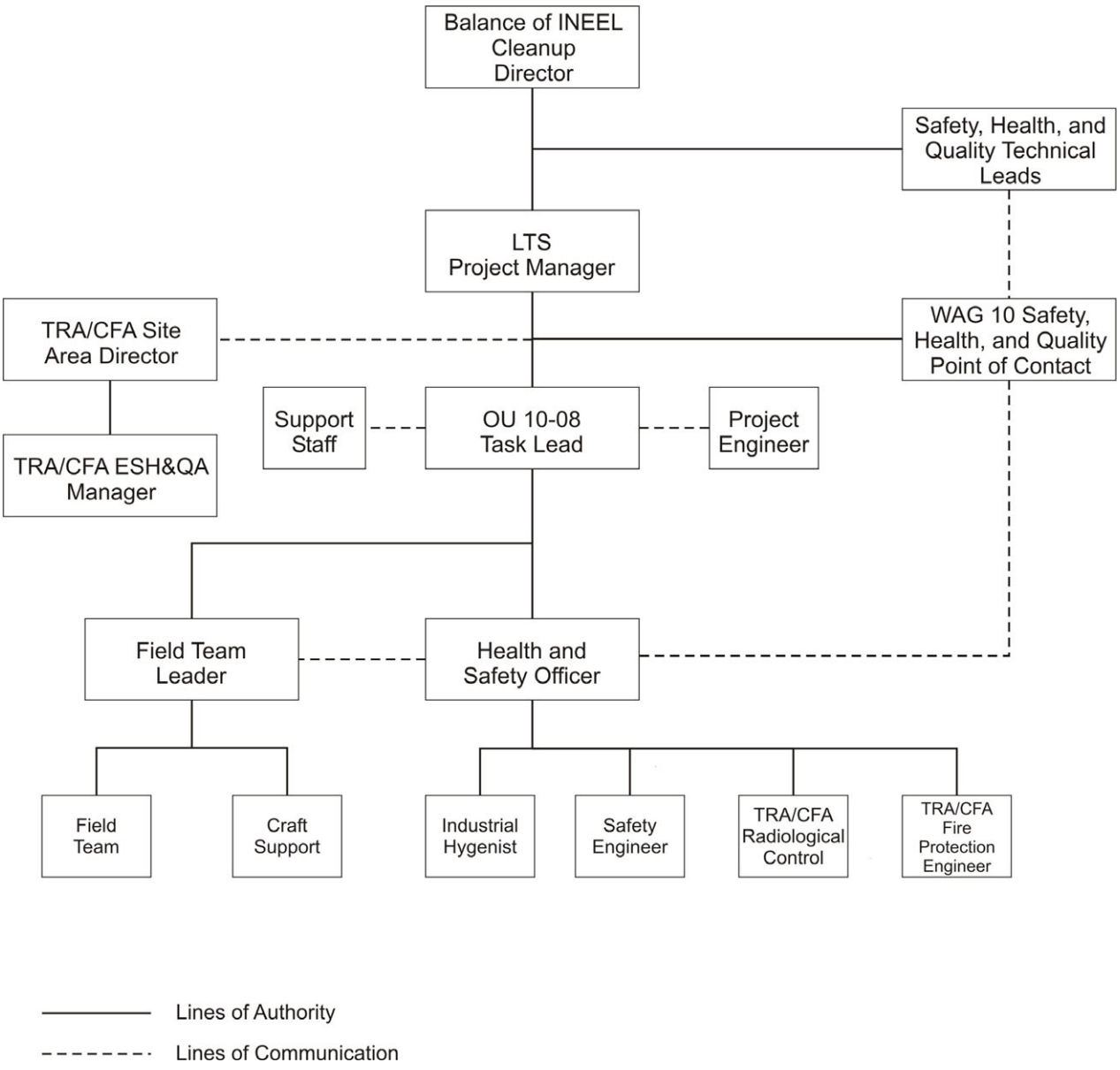

Figure 7-1. Field organization chart for the Waste Area Group 10 Track 2 sites.

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Appendix A

Sampling and Analysis Plan Tables

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: WAG10-TRACK2

SAP Number: DOE-NE-ID-11135

Date: 03/17/2004 Plan Table Revision: 0.0 Project: WAG 10 TRACK 2 INVESTIGATION Project Manager: JOLLEY, WENDELL L SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										R4	LD	HG	N7	5X	RH	RN	SV	SX	TP	VY									
033000	REG/QC	SOLID	DUP		6/10/2004	EOCR-01	LEACH POND	SITE 033	NA		2		2																
033001	REG	SOLID	GRAB		6/10/2004	EOCR-01	LEACH POND	SITE 033	NA		1			1															
033002	REG	SOLID	COMP		6/10/2004	EOCR-01	LEACH POND	SITE 033	0-2		1		1																
10A000	REG	SOLID	GRAB		6/10/2004	CFA	CONCRETE RING	CFA-10A	0-2						1		1		1	1									
10A001	REG/QC	SOLID	DUP		6/10/2004	CFA	CONCRETE RING	CFA-10A	4-6						2		2		2	2									
10A002	REG	SOLID	GRAB		6/10/2004	CFA	CONCRETE RING	CFA-10A	8-10						1			1	1	1									
10A003	REG	SOLID	COMP		6/10/2004	CFA	CONCRETE RING	CFA-10A	0-2						1		1		1	1									
605004	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605005	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605006	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605007	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605008	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605009	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605010	REG/QC	SOLID	DUP		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						2														
605011	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Gamma Spec

AT2: Lead

AT3: Mercury

AT4: Nitroaromatics (8330)

AT5: Nitroaromatics (8330) MS/MSD

AT6: Radiochemistry - Suite 1

AT7: Radiochemistry - Suite 2

AT8: SVOCs (SW-846)

AT9: SVOCs (SW-846) - MS/MSD

AT10: TPH

AT11: Total Metals (UTS TAL)

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

Sampling activity # 605016 is the sample from the Warm Waste Pipeline with the highest radioactivity level from the field screening test.

Analysis Suites:

Radiochemistry - Suite 1: Tc-99, Gamma Spec, Tritium, Sr-90

Radiochemistry - Suite 2: Am-241, Ni-59, Ni-63, Pu-Iso, U-Iso, Thorium Isotopic

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: WAG10-TRACK2

SAP Number: DOE-NE-ID-11135

Date: 03/17/2004 Plan Table Revision: 0.0 Project: WAG 10 TRACK 2 INVESTIGATION Project Manager: JOLLEY, WENDELL L SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										R4	LD	HG	N7	5X	RH	RN	SV	SX	TP	VY									
605012	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605013	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605014	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605015	REG	SOLID	GRAB		6/10/2004	TRA	WRM WST PIPELIN	TRA-605	TBD						1														
605016	REG	SOLID	GRAB		6/10/2004	TRA	WWP-HIGH RAD	TRA-605	TBD							1													
608000	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608001	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608002	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608003	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608004	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608005	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608006	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608007	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608008	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608009	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Gamma Spec

AT2: Lead

AT3: Mercury

AT4: Nitroaromatics (8330)

AT5: Nitroaromatics (8330) MS/MSD

AT6: Radiochemistry - Suite 1

AT7: Radiochemistry - Suite 2

AT8: SVOCs (SW-846)

AT9: SVOCs (SW-846) - MS/MSD

AT10: TPH

AT11: Total Metals (UTS TAL)

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

Sampling activity # 605016 is the sample from the Warm Waste Pipeline with the highest radioactivity level from the field screening test.

Analysis Suites:

Radiochemistry - Suite 1: Tc-99, Gamma Spec, Tritium, Sr-90

Radiochemistry - Suite 2: Am-241, Ni-59, Ni-63, Pu-Iso, U-Iso, Thorium Isotopic

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: WAG10-TRACK2

SAP Number: DOE-NE-ID-11135

Date: 03/17/2004 Plan Table Revision: 0.0 Project: WAG 10 TRACK 2 INVESTIGATION Project Manager: JOLLEY, WENDELL L SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1 R4	AT2 LD	AT3 HG	AT4 N7	AT5 5X	AT6 RH	AT7 RN	AT8 SV	AT9 SX	AT10 TP	AT11 VY	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
608010	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608011	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608012	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608013	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608014	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608015	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608016	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608017	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608018	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608019	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608020	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608021	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608022	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608023	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608024	REG/QC	SOLID	DUP		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		2	2	.																

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Gamma Spec

AT2: Lead

AT3: Mercury

AT4: Nitroaromatics (8330)

AT5: Nitroaromatics (8330) MS/MSD

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AT8: SVOCs (SW-846)

AT9: SVOCs (SW-846) - MS/MSD

AT10: TPH

AT11: Total Metals (UTS TAL)

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

Sampling activity # 605016 is the sample from the Warm Waste Pipeline with the highest radioactivity level from the field screening test.

Analysis Suites:

Radiochemistry - Suite 1: Tc-99, Gamma Spec, Tritium, Sr-90

Radiochemistry - Suite 2: Am-241, Ni-59, Ni-63, Pu-Iso, U-Iso, Thorium Isotopic

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: WAG10-TRACK2

SAP Number: DOE-NE-ID-11135

Date: 03/17/2004 Plan Table Revision: 0.0 Project: WAG 10 TRACK 2 INVESTIGATION Project Manager: JOLLEY, WENDELL L SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
										AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	R4	LD	HG	N7	5X	RH	RN	SV	SX	TP	VY									
608025	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608026	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608027	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608028	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608029	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608030	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608031	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608032	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608033	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608034	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608035	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608036	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608037	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608038	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608039	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Gamma Spec

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AT14:

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AT17:

AT18:

AT19:

AT20:

Comments:

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Date: 03/17/2004 Plan Table Revision: 0.0 Project: WAG 10 TRACK 2 INVESTIGATION Project Manager: JOLLEY, WENDELL L SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1 R4	AT2 LD	AT3 HG	AT4 N7	AT5 5X	AT6 RH	AT7 RN	AT8 SV	AT9 SX	AT10 TP	AT11 VY	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
608040	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608041	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608042	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608043	REG/QC	SOLID	DUP		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		2	2																	
608044	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608045	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608046	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608047	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608048	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608049	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608050	REG/QC	SOLID	DUP		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		2	2																	
608051	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608052	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608053	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608054	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number. The complete sample identification number will appear on the sample labels.

AT1: Gamma Spec

AT2: Lead

AT3: Mercury

AT4: Nitroaromatics (8330)

AT5: Nitroaromatics (8330) MS/MSD

AT6: Radiochemistry - Suite 1

AT7: Radiochemistry - Suite 2

AT8: SVOCs (SW-846)

AT9: SVOCs (SW-846) - MS/MSD

AT10: TPH

AT11: Total Metals (UTS TAL)

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

Sampling activity # 605016 is the sample from the Warm Waste Pipeline with the highest radioactivity level from the field screening test.

Analysis Suites:

Radiochemistry - Suite 1: Tc-99, Gamma Spec, Tritium, Sr-90

Radiochemistry - Suite 2: Am-241, Ni-59, Ni-63, Pu-Iso, U-Iso, Thorium Isotopic

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: WAG10-TRACK2

SAP Number: DOE-NE-ID-11135

Date: 03/17/2004 Plan Table Revision: 0.0 Project: WAG 10 TRACK 2 INVESTIGATION Project Manager: JOLLEY, WENDELL L SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1 R4	AT2 LD	AT3 HG	AT4 N7	AT5 5X	AT6 RH	AT7 RN	AT8 SV	AT9 SX	AT10 TP	AT11 VY	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
608055	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608056	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608057	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608058	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608059	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608060	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608061	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608062	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608063	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608064	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608065	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	
608066	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	0-2		1	1																	
608067	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	4-6		1	1																	
608068	REG	SOLID	GRAB		6/10/2004	TRA	NRTH FENCD AREA	TRA-608	8-10		1	1																	

The sampling activity displayed on this table represents the first 6 to 9 characters of the sample identification number.

The complete sample identification number will appear on the sample labels.

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AT2: Lead

AT3: Mercury

AT4: Nitroaromatics (8330)

AT5: Nitroaromatics (8330) MS/MSD

AT6: Radiochemistry - Suite 1

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Comments:

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Radiochemistry - Suite 2: Am-241, Ni-59, Ni-63, Pu-Iso, U-Iso, Thorium Isotopic

Contingencies: